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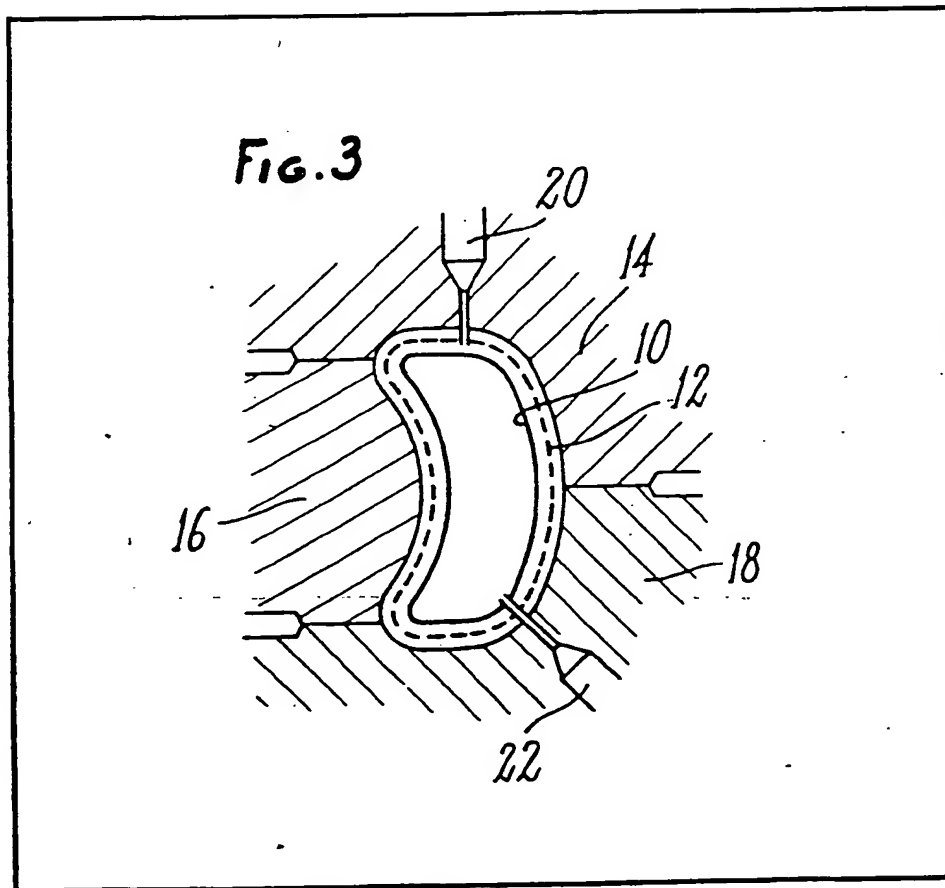
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(54) A method for the manufacture of a cycle or autocycle wheel rim

(57) The method comprises placing an assembly on a tubular braided glass fibre sleeve 12 and an inner inflatable sleeve 10 in a mould 14, 16, 18 having the desired shape of the wheel rim, inflating the assembly through an air inlet channel 22, injecting a plastics material into the mould between the sleeves 10 and 12 through a plurality of channels 20, curing the plastics, and stripping out the wheel rim thus formed.



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Fig. 1

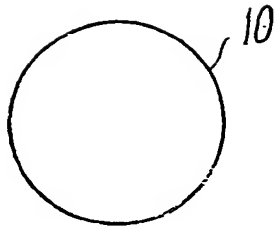


FIG. 2

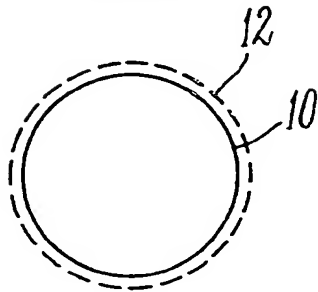
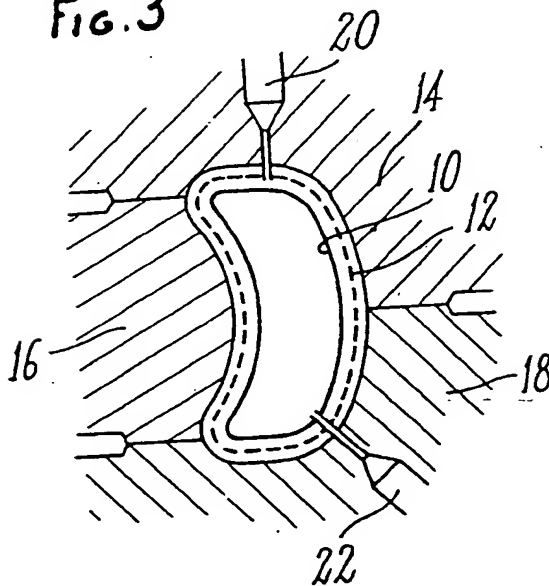


FIG. 3



**FIG. 4**

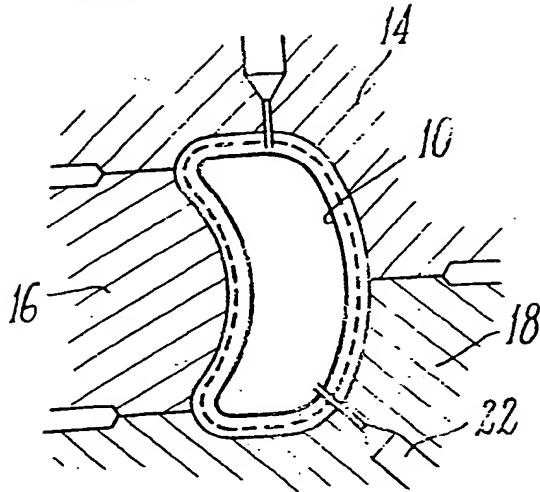


FIG. 5

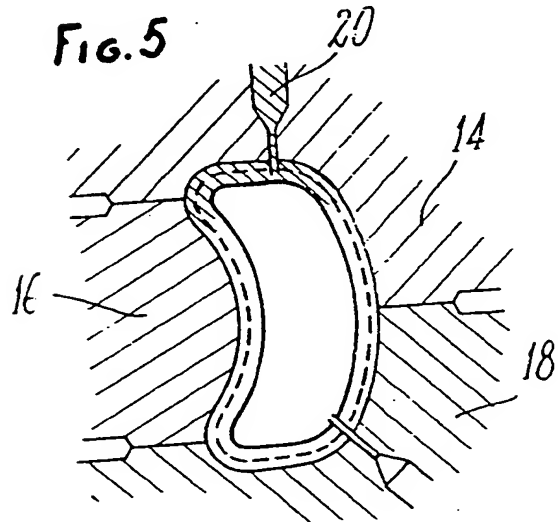
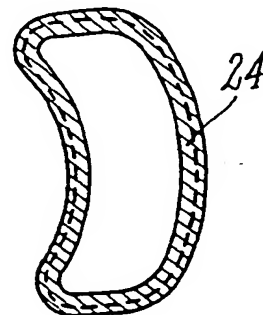


Fig. 6



## SPECIFICATION

### A method for the manufacture of a cycle or autocycle wheel rim

The present invention relates to a method for making a wheel rim, particularly for cycles or autocycles.

It is known that such wheel rims are currently made either in steel or in a light alloy. Steel rims are economical to manufacture, but they have the disadvantage of being heavy. On the other hand, light alloy rims have, of course, the advantage of a light weight relative to the steel rims, but their manufacture remains costly.

The Applicant proposes to provide a manufacturing method of a wheel rim in a reinforced synthetic material, designed so as to exhibit improved mechanical characteristics relative to the steel rims or the light alloy rims, said method having moreover the advantage of being economical in its application and allowing on the other hand a mass production.

The method according to the invention consists essentially in applying to the manufacture of wheel rims a method known *per se* consisting in using a tubular braided glass fibre sleeve which is inflated to conform its shape to the inside of a mould.

This method is characterised in that it comprises the successive following steps:

- a placing an inflatable sleeve inside a tubular braided glass fibre sleeve;
- b placing an appropriate length of the assembly formed by the two concentric sleeves in a mould having the desired shape of the wheel rim and comprising plastics material injection channels and at least one air inlet emerging inside the inflatable sleeve.
- c inflating said inflatable sleeve through said air inlet channel,
- d injecting plastics material into the mould between the inflated sleeve and the braided glass fibre sleeve,
- e baking the mould for setting the structure obtained, and then stripping out the wheel rim thus formed.

Aluminium powder may be diffused in the plastics material injected in the mould so as to improve the behaviour of the finished wheel rim on braking, through better dissipation of the heat produced by said braking.

It is also possible to incorporate into the plastics material injected in the mould reflectorizing particles such as in particular glass micro-spheres so as to make the wheel rim manufactured according to the method of the invention retro-reflecting.

Further characteristics and advantages of the invention will become more apparent from the following description of an embodiment thereof, reference being made to the accompanying drawings wherein:

Figure 1 is a sectional view of an inflatable sleeve;

Figure 2 is a sectional view of a braided fibre glass sleeve surrounding the inflatable sleeve;

Figure 3 shows the position in a mould of the assembly represented in Fig. 2;

Figure 4 shows the inflation of the sleeve;

Figure 5 shows the injection of the plastics material, and

Figure 6 is a sectional view of the finished wheel rim.

As mentioned hereabove, the method according to the invention uses a tubular sleeve 12 made of braided glass fibre which is inflated to conform it to the inside shape of a wheel rim mould.

Fig. 1 shows the inflatable tubular sleeve 10 which in Fig. 2 has been introduced inside the tubular sleeve 12. The following step is to place an appropriate length of the assembly of the two sleeves 10 - 12 thus formed in to a wheel rim mould (Fig. 3).

The mould is made in three parts 14, 16 and 18, and comprises on the one hand a number of channels 20 for the injection of the plastics material and at least one channel 22 for feeding air into the inflatable sleeve 10. Preferably the mould has twelve injection channels 20 for the plastics material, positioned so as to obtain a homogeneous distribution of the plastics material.

As shown in Fig. 4 one next proceeds to inflate the sleeve 10 by blowing compressed air through channel 22. The assembly being thus inflated, one proceeds to the injection of the plastics material through channels 20, Fig. 5. The channels 20 provide a homogeneous distribution of the material which impregnates the braided fibre glass sleeve 12. One proceeds thereafter to the baking of the mould for setting the plastics material.

The final step of the method consists in separating the three mould elements in order to strip out the manufactured wheel rim 24 shown in Fig. 6.

One may incorporate aluminium particles in the plastics material injected in the mould. Said particles improve the behaviour of the finished wheel rim on braking by providing a good dissipation of the heat resulting from the braking.

One may also incorporate reflectorizing particles in the injected plastics material, for example glass micro-spheres, which impart to the finished rim retro-reflecting properties which improve the safety of cycles and autocycles equipped with such rims.

Wheel rims made according to the invention may be designed for receiving tubular tyres, as is the case of rim 24 shown in Fig. 6 or standard tyres with beads.

The method according to the invention may also be used for manufacturing wheel rims such as described in Patent Applications Nos:

8020984 and 8021016.

It is emphasized that the present invention is not limited to the embodiments set forth in the description and drawings and that it covers all possible modifications within the scope of the claims.

#### CLAIMS

1. A method of manufacturing a cycle or autocycle wheel rim, which method comprises the following successive steps:

a placing an inflatable sleeve inside a tubular braided glass fibre sleeve,

b placing an appropriate length of the assembly formed by the two concentric sleeves into a mould having the desired shape of the wheel rim and comprising plastics material injection channels and at least one air inlet channel emerging inside the inflatable sleeve,

c inflating said inflatable sleeve through said air inlet channel so as to conform the shape of the assembly to the inside of the mould;

d injecting plastics material into the mould between the inflated sleeve and the braided glass fibre sleeve,

e baking the mould for setting the structure obtained, and then stripping out the wheel rim thus formed.

2. A method according to Claim 1, wherein aluminium particles are incorporated in the plastics material injected in the mould.

3. A method according to either of Claims 1 and 2, wherein reflectorizing particles, such as glass micro-spheres, are incorporated in the plastics material injected in the mould.

4. A method according to Claim 1 and substantially as hereinbefore described.

5. A wheel rim when made by the method claimed in any one of the preceding claims.